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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,346	07/25/2006	Leonard Rexberg	4147-141	6407

23117 7590 01/21/2010  
NIXON & VANDERHYE, PC  
901 NORTH GLEBE ROAD, 11TH FLOOR  
ARLINGTON, VA 22203

EXAMINER
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GHULAMALI, QUTBUDDIN

ART UNIT	PAPER NUMBER
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2611

MAIL DATE	DELIVERY MODE
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01/21/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/560,346	<b>Applicant(s)</b> REXBERG, LEONARD	
	<b>Examiner</b> Qutbuddin Ghulamali	<b>Art Unit</b> 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 03 November 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. This action is responsive to amendment filed 11/3/2009.

#### ***Response to Remarks/Amendment***

2. Applicant's remarks with respect to amended claims 1-14 have been considered but are moot in view of the new ground(s) of rejection. The claim rejection as follows.

#### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103 ` (a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-14 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Wright et al (US Pub. 2002/0008578) in view of Ding et al (USP 7,269,231).

Regarding claims 1, 6, Wright discloses a training method for a power amplifier pre-distorter formed by a FIR filter structure, wherein the FIR filter structure includes look-up table for filter tap, the method comprising:

selecting, from filter tap look-up table, a filter coefficient that depends on the amplitude of a corresponding complex signal value to be multiplied by the filter tap (figs. 3, 4A, 4B, 5, 7, 37, 38; page 6, sections, 0073, 0087, 0093, 0095, 0096, 0098; page 7, section 0100, 0101, 0102, 0104, 0105);

determining a first estimate (Adaptive Control Processing and Compensation Estimator (ACPCE)) of a first look-up table assigned to a first filter tap, assuming a second look-up

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table assigned to a second filter tap is set to predetermined table values (page 4, sections 0071, 0072, 0073, 0074; page 5, section 0079; page 6, section 0086); determining a second estimate of the second look-up table, assuming the first look-up table is set to the determined first estimate (page 4, sections 0071, 0072, 0073, 0074; page 5, section 0079; page 6, section 0086, 0087, 0093; page 7, section 0100, 0101, 0102, 0104, 0105; page 8, section 0114; page 27, section 0411, 0414). Wright does not explicitly disclose each look-up table represents a discretized polynomial in a variable representing signal amplitude (magnitude). However, Ding in a similar field of endeavor discloses Fir filter structure include individual look-up tables each represents a discretized polynomial in a variable representing signal amplitude (magnitude of the signal) (col. 2, lines 31-53; col. 4, lines 5-8, 44-67). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use individual look-up tables represent signal amplitude (magnitude) as taught by Ding in the system of Wright because distortion with adjacent channel power (time spaced input samples) that are typically associated with amplifier nonlinearity at high output power levels can be minimized or cancelled with predistortion of signal.

Regarding claims 2, 7, Wright discloses refining the first estimate, assuming the second look-up table is set to a latest determined second estimate (Wright discloses use of look-up table as a multi dimensional table wherein each element of the table stores a complete set of compensation parameters and indexed (page 6, section 0092, 0096, 0098; page 22, section 0347)).

Regarding claims 3, 8, Wright discloses

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(a) refining the first estimate, assuming the second look-up table is set to the latest determined second estimate (instantaneous attribute) (page 6, section 0096, 0098; (b) refining the second estimate, assuming the first look-up table is set to a latest determined first estimate (Wright discloses the table is updated on a continuous basis to include several updates) (page 7, section 0100, 0101, 0102, 0104, 0105).

Regarding claims 4, 9, Wright discloses that in order to achieve linearity the estimates are iteratively used to minimize error that can be converged upon) (page 18, sections, 0298, 0302).

Regarding claims 5, 10, 11, 12, 13, 14, Wright discloses determining estimates (first, second and so on), refining estimates involve solving equations having a same algebraic form (page 18, section 0298, 0299, 0300, 0301; page 8, section 0110, 0111).

### ***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Qutbuddin Ghulamali whose telephone number is (571)-272-3014. The examiner can normally be reached on Monday-Friday, 7:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

QG.  
January 8, 2010.

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/CHIEH M FAN/

Supervisory Patent Examiner, Art Unit 2611